though the light of gas flames, concentrated into a very brilliant focus by means of thick plano-convex lenses, produced a very sensible heating power; it does not in the slightest degree blacken the chloride of silver, nor does it influence the combination of chlorine with hydrogen, which is a yet more susceptible test of the direct influence of the solar rays; on the other hand, the brilliant light occasioned by the discharge of the voltaic apparatus, presently blackens the chloride of silver; and when a mixture of chlorine and hydrogen is exposed to its influence, it causes the production of muriatic acid, sometimes quietly and sometimes with explosion, in the manner of the solar rays. The concentrated rays of lunar light neither possess heating powers, nor do they appear to influence chemical combination.

In conclusion the author, after adverting to the inefficiency of Mr. Leslie's photometer, for measuring the intensity of artificial light, suggests an instrument in which the effects are measured by the expansion of the vapour of ether, renewable from a column of that fluid.

*On the Elasticity of the Lungs.* *By* James Carson, *M.D.* *Communicated by* Thomas Young, *M.D. For. Sec. R.S.* Read Nov. 25, 1819. [*Phil. Trans.* 1820, *p.* 29.]

In a treatise published some years ago on the motion of the blood, the author contended that the influence of the elasticity of the lungs upon that function had been overlooked by physiologists. The object of the present communication is to ascertain the real force of this elastic power, as it exists in the healthy living body. For this purpose Dr. Carson connected with the trachea of several animals a glass syphon, so placed as to admit of pressure being exerted upon the lungs by a column of water contained in it; an opening was made into the cavity of the chest on both sides, and the height of the column of water in the tube was considered as equivalent to the pressure exerted upon it by the elastic power of the lungs of an ox: the author thinks it clearly ascertained "that the spring of air compressed by a column of water, of a foot and a half high, is not equal to the rebounding spring of the lungs at the usual stage of their dilatation." The only experiment, however, which gave, in the author's opinion, conclusive results, was made upon a dog; for in all the others the gradual sinking of the water to its ordinary level in the syphon indicated some wound in the lungs. In the present case the height of the column of water supported in the tube was ten inches.

Dr. Carson concludes this paper with some observations on the modes of effecting artificial respiration, and on the method of ascertaining the actual quantity of air existing in the lungs after complete expiration.